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ABSTRACT

Educational standards are an essential tool for many school districts in their efforts to increase student academic achievement. Elementary school administrators and teachers play a critical role in the process of gathering, analyzing, and synthesizing student data with the goal of creating a meaningful plan to accomplish this goal. This article discusses practical steps in the data-analysis process in elementary schools. Administrators should act as facilitators; that is, as coaches, monitors of instruction, and reviewers of assessments and results created and applied by teachers. The Stanford Achievement Test (SAT 9) is given as an example of a comprehensive, objective means of assessing student academic achievement. Other sources of assessment data are recommended to complement SAT information. Administrators should work with leadership teams in formulating a data-gathering and data-analysis process, and later, to maintain the process. The practical considerations in this article represent processes universally applicable to school districts. External consultants can be used to complement assessment activities, especially considering that they come in with outsiders' points of view. An alternative to external consultants is in-district leadership teams. Ultimately, it is the collaborative efforts of the school-site faculty, facilitated by the administrator, that will make the difference. (RT)

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# Elementary School Data Analysis

**Alen Badal, Ph.D.**

*Elementary school administrators and teachers play a critical role in the process of gathering, analyzing, and synthesizing student data in an effort to increase student academic achievement. The objective of this article is to discuss practical steps in the elementary data analysis process.*

Educational academic standards are the focus of many school districts in California. The aim has been to increase student academic achievement, which is conventionally measured by the Stanford Achievement Test Series, Ninth Edition (SAT 9) (STAR, 2001). A challenge remains to be pinpointing an effective method to gather and analyze available data in order to identify strategies to strengthen academic achievement of students. The task of gathering and analyzing student data does not finalize the process; administrators need to also synthesize the findings, which can then be used to create a plan of action to implement.

How can administrators pinpoint, analyze, and synthesize data in order to result in a meaningful plan to strengthen student achievement? This article lists some useful practical strategies that administrators can apply in schools focused on increasing student academic achievement. The practical viewpoints in this article are applicable to not only elementary schools in California, which is where the perspectives stem from, but also elementary schools throughout the United States as well.

A key to raising academic performance of students is the classroom teacher, without a doubt. Assessing areas of weaknesses within the curriculum and outcomes as a result of instruction are crucial, too. Raising the Academic Performance Index (API)

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(California Department of Education, 2001) scores of an elementary school is top priority among administrators throughout California. Administrators, aside from teachers, are instrumental in the strategic development process leading to the academic growth of students.

In brief, appropriate utilization and analysis of selected data is the key in raising standards, facilitated by administrators. To follow will be a discussion of the process associated with the objective to increase elementary student achievement.

**Role of Administrators**

School site administrators serve as the school site's instructional/curriculum leaders and therefore, play a key role in the process of identifying strategies to raise API scores. Without a doubt, teachers are the key ingredients in the classroom. Administrators have the role of ensuring the entire staff is synchronized and fully understand the objectives.

The facilitative role of administrators should be to serve as a coach and/or monitor of instruction. While administrators are not the sole creators of assessments and the delivery of instruction, they monitor and ensure what has been created is of value and in comprehensible levels to better serve all students to include mainstreamed/exceptional children along with the gifted and talented education students.

A further role of administrators should be to review pre/post assessment contents and results created and applied by the classroom teachers. A list of criteria that exams should address include:

1. Alignment with the taught curriculum, which should be supplemented by the use of technology: curriculum alignment allows for students to be equitably assessed on the

objectives. Integrating technology can aide by reinforcing the taught curriculum, as technology is of high interest to students and interactive.

2. Consistent with addressing the California Content Standards (California Department of Education, 2001): The standards represent grade-level competencies each student is responsible for learning and teachers teaching. Therefore, exam contents must revolve around content standards taught.
3. Addressing the California Standards for the Teaching Profession (California Department of Education, 2001): The standards assist teachers in lesson planning and delivering instruction. More specifically, the standards focus on the process, whereas the content standards focus on the content to teach.

Additionally, teachers must also devise and implement a remediation action plan to address the following:

1. How to design programs for the gifted and talented education students? All too often, such students are not challenged and as a result lose ground, academically.
2. How to remediate instruction/curriculum for the underachieving student? The easy part is to assess student achievement by way of pre and posttests; however, the challenge remains to utilize the results from the assessments in reviewing the taught objectives.
3. How to address the bilingual/exceptional student(s)? Exception and bilingual children necessitate specially designed curriculum suitable for their academic level.
4. How to ensure that regular education students are advancing? Such students should be monitored to ensure they are advancing. The challenge remains distributing instructional time between the students requiring individualized needs in the classroom as some classrooms typically include English language learner students and exceptional children, too, among others.
5. How to create a review plan and process to ensure that students continually review the learned curriculum? Supplementing the above point (#2), teachers must devise and implement a review plan specifically focusing on academic competencies not achieved by students.

The questions above can best be addressed with the involvement of the administrator in a facilitative role, coupled with the assistance of the school site teachers. While a specific action plan may vary depending on the school/district, the process should be the same, which is to involve a team of individuals involved with the everyday functions of teaching.

In summary, the administrator's role is quite challenging. They must ensure that plans are according to what is necessary to achieve academic gains. The facilitative role monitors what has been designed and taught by the classroom teacher, with the approval of the administrator. An equally important task of the administrator should be to ensure that a curriculum-pacing schedule is completed, addressing all the components of the curriculum guide aimed at increasing student achievement. Working in teams, consisting of administrators and teachers can best complete this process. Normally, the adopted curriculum texts come with a pacing schedule; however, pacing lessons specific to year-round tracks and/or individual class academic progress remains the challenge of the school site. Furthermore, pacing schedules designed by the publishers are not specifically tailored to the specific needs of each respective elementary school or grade-level.

Essentially, the pacing schedule assists the teacher to maintain focus on contents needing to be taught for the year and knowing where certain or many contents/subjects can be thematically integrated with other lessons. This process is especially critical as the SAT 9 testing dates of many schools begins clearly prior to the ending of the school year. This limits instructional days to cover contents prior to the testing dates. Thematically integrating contents essential to know for the SAT 9 within other lessons prior to exam time will better prepare the students to achieve higher scores.

**Data Collection Process**

There are many useful sources of data that can be assessed in order to gauge where students are and where they need to be headed. A comprehensive, objective assessment used to assess student academic achievement is by way of the SAT 9 test. The single most puzzling question is what other relevant data can be collected, which would

benefit administrators and teachers in determining what strategies to implement? To answer this question with a concrete response would be premature as what one school/administrator may believe is relevant data may not be of use to another. It is safe to prioritize SAT 9 results as critical. Objective sources of data carry a heavy weight and generally serve as useful data. They typically include questions that are non-narrative and have only one right response, such as multiple-choice exams.

Other sources of data, such as portfolios are very useful and should be considered. For example, the mechanics of writing can be objectively assessed by way of a multiple-choice exam. A finished product, such as an essay can assist a teacher/administrator in determining the level of writing and areas in need of strengthening.

Pre and post exams for the essential subjects, such as mathematics and language arts should be collected and considered as useful data. They should, of course, be tied to the California Content Standards and also address the California Standards for the Teaching Profession.

**Data Analysis and Synthesis**

The data analysis step is very important following the collection of useful data, as discussed previously. This process should be viewed as a multiple-step process, to include teachers and administrators. The first step is to consider the SAT 9 results along with other data. Each teacher should do the following:

1. Analyze sections and sub-sections where students scored less than average under the Content Clusters categories of the STAR Group Report form (STAR, 2001). This process informs a teacher of areas in need of strengthening;
2. Review the pre and post exam results from disciplines, such as mathematics and language arts to see if gains were achieved. Such assessments allow teachers to truly gauge levels of understanding among their students. While the assessment of SAT 9

scores would not be able to be remedied for a current class, pre and post assessments may be applied during a given school year;

3. Analyze writing samples to note mechanics and grammar usage and overall writing quality. Assessments can be multiple-choice and/or use of a grading rubric of 4, 3, 2, or 1. Each rubric number should clearly list competencies deserving the respective number; and
4. Collect a sample representing the students in the class, to include G.A.T.E., exceptional, bilingual, and regular education students. This process allows teachers to collectively analyze their students across the board. More importantly, conceptualize needs adjustments within their teaching practices.

Aside from special circumstances, all students must take the SAT 9 exam; therefore, the students' test results have an impact on a school's Academic Performance Index (API). Additionally, in referencing SAT 9 content percentages, it is important to devise and implement curriculum to include periodic assessments to gauge content learned. In many instances, assessments throughout the instructional cycle would identify mastery of the subject matter or lack of it.

For example, if synonyms under the Reading Vocabulary (STAR, 2001) content cluster are in need of improvement at a particular grade at the elementary level, then a curriculum plan should be developed addressing that particular module. It should include the time the subject will be taught, how it will be modified and/or reviewed, and when assessed. Most importantly, how the assessment data will be used in determining if the students mastered the content and what happens if one or more students have not mastered the content.

The teacher analysis provides an opportunity to examine areas in need of improvement. The administrator's role in the teacher data analysis process includes discussing on a one-on-one basis and noting identified strengths and weaknesses of each

student's academic progress. Most importantly, brainstorming strategies to be shared with the grade level teachers and teachers from other grades, too.

The involvement of the grade level teachers to discuss individual results of not only the selected type of students, but also the entire class in general provides the opportunity for each teacher of the grade level to share findings. Together, the teachers can then identify similarities and differences within their classrooms.

The administrator's involvement in this process supports and facilitates findings and suggestions yielded by the grade level teachers. At this stage, the administrator may input suggestions regarding possible causes of deficiencies among students, supported by research and/or classroom observations. At the conclusion of the meeting with the administrator, which serves as the instructional leader, and the teachers, results can then be noted to be shared with other teachers.

The input of teachers, other than the same grade level, provides the opportunity for the next years' teachers (i.e., third grade meet with fourth grade) to share and/or provide suggestions for consideration leading to gaining academic achievement. It is recommended that teachers connect with the following years' teachers where the students will be promoting to. It is necessary to incorporate/stress certain academic instructional methods/areas within a respective grade as it forms a beginning point for the next academic year teachers. This is not to say a teacher abandons specific grade-level standards for the given year, but instead stresses and/or adds to one or more components to assist the receiving teacher the following year. The same process should be accomplished at each grade level.

**Strategic Plan**

In order to begin the process of gathering and analyzing data, the administrator and/or the district should inservice, or provide in-house training focusing on the process discussed in this article. The administrator should note that effective teaching workshops and/or mentor teachers should be identified for recommendation to teachers that practices within the classroom are a potential cause for the lack of academic achievement of the students. Many districts implement teacher support programs aimed at assisting new teachers entering the profession. Normally, a master teacher is assigned to periodically assess delivery of instruction and lesson plans, etc.

The administrator, throughout the school year should periodically observe entering teachers to provide necessary support and coaching, too. The objective is to develop teachers, as ineffective teaching practices are normally the root cause for gaps in student gains. Additionally, veteran teachers should be observed informally periodically, too, assessing professional teaching practices.

In brief, the administrator should discuss the appropriate steps of beginning the data gathering and analysis process with the leadership team within the school site. At that point, the administrator can devote a staff meeting solely for discussing the process, with leadership members present to field questions any one may have.

**Applicability of Process**

Regardless of the school/district size, urban or suburban, the analysis process remains the same. Individual schools within a district may seek different outcomes; however, the process to achieve the outcomes, as discussed here, do not change. As we know, different schools, even within the same district, have different needs. Administrators

within each respective school have the same responsibility: continue to increase student achievement, among other duties.

**Concluding Thoughts**

The practical considerations presented in this article represent processes universally applicable to districts. However, to compliment the discussed process, many districts/schools, such as underachieving ones, involve the use of external consultants in the data gathering and analysis process. Even though such strategies are costly to districts/schools, they provide an expert analysis from outside of the school. Often, grants can be applied for to assist in funding such programs.

External consultants provide an advantage that an internal team lacks, such as analyzing the school and its programs without ever being connected with it. An internal team, consisting of the administrator and teachers may result in a biased analysis; however, with the use of an external consultant, it may be likely that one or more findings may be identified that internal teams may overlook. For example, in the analysis of teaching, an internal team may note the given, such as normal practices aware of without analyzing the effectiveness or universal practices across all the teachers.

An alternative to external consultants is in-district leadership teams. These teams can comprise of leaders within different elementary schools in a district, each visiting schools in the district, serving as consultants. The teams would then gather and report their findings to the school in which they visited. This process can be helpful and cost-effective for elementary schools. Also, it serves as a productive learning process as each team representing a school has the chance to witness what occurs at other schools within

the district. This process would allow school leadership teams to apply ideas and/or programs in action at other school sites.

In brief, the school site administrator plays a key role in the data gathering and analysis process. The facilitative role of the administrator is challenging, as the administrator must guide the school and grade level data gathering, analysis, and synthesis process. Ultimately, it is the collaborative efforts of the school site faculty, facilitated by the administrator that will make the difference!

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